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Particle-ularly Haptics: Investigating the Relationship Between Visual Feedback and Mid-Air Haptic Texture

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ABSTRACT

Mid-air haptic feedback technology produces tactile sensations that are felt without the need for physical interactions, and bridges the gap with digital interactions, by making the virtual feel real. However, existing mid-air haptic experiences often do not reflect user expectations in terms of congruence between visual and haptic stimuli. To overcome this, we investigate how to better present the visual properties of objects, so that what one feels is a more accurate prediction of what one sees. In the following demonstration, we present an approach that allows users to fine tune the visual appearance of different textured surfaces, and then match these to corresponding mid-air haptic stimuli in order to improve visual-haptic congruence.

CCS CONCEPTS

• **Human-centered computing** → **Haptic devices**; *User centered design*.

KEYWORDS

haptics, ultrasound, visual feedback, user studies, texture

ACM Reference Format:

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1 REQUIREMENTS AND DEMONSTRATOR

This demonstrator will require a simple table that can comfortably fit a laptop computer and an Ultrahaptics mid-air haptics array. In addition, 2 power sockets will be required. Figure 1 highlights the layout of the required set up as needed to present the demonstrator. Figure 2 displays an on-screen visualisation of the demonstrator.

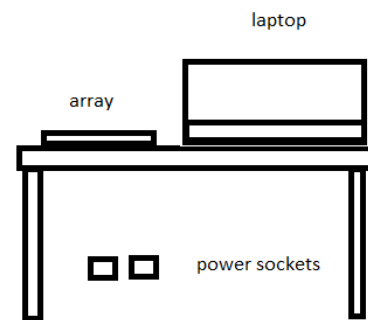


Figure 1: Required layout for demonstrator. Laptop, Ultrahaptics mid-air haptics device, and 2 power sockets.

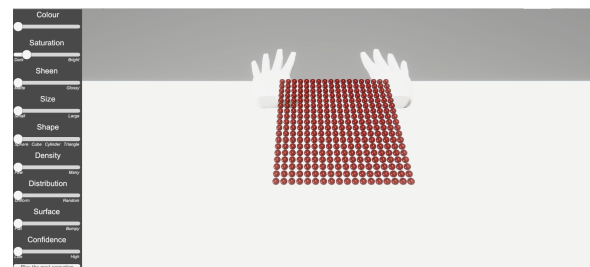


Figure 2: On-Screen representation of demonstrator.

2 EXTERNAL VIDEO LINKS

<https://youtu.be/fGAgMMUKRZE>
<https://youtu.be/FHETzk2ZoWY>